

1 WHAT IS CLAIMED IS:

1 1. A method for providing a self heating adjustable titanium
2 disilicon (TiSi_2) resistor, said method comprising the steps of:

3 placing a triangularly shaped layer of polysilicon on a layer
4 of insulation material;

5 applying a layer of titanium over said triangularly shaped
6 layer of polysilicon; and

7 heating said layer of titanium to form a triangularly shaped
8 layer of C49 type titanium disilicon (TiSi_2) in said triangularly
9 shaped layer of polysilicon.

1 2. The method as set forth in Claim 1 further comprising the
2 steps of:

3 coupling a small end of said triangularly shaped layer of
4 polysilicon to an input contact;

5 coupling a large end of said triangularly shaped layer of
6 polysilicon to an output contact;

7 coupling an input metal connector to said input contact; and

8 coupling an output metal connector to said output contact.

1 3. The method as set forth in Claim 1 wherein a thickness of
2 said layer of titanium is approximately five hundred Ångstroms
3 (500 Å).

1 4. The method as set forth in Claim 1 wherein said step of
2 heating said layer of titanium to form a layer of C49 type titanium
3 disilicon (TiSi_2) in said triangularly shaped layer of polysilicon
4 comprises the step of:

5 heating said layer of titanium to a temperature of
6 approximately six hundred twenty degrees Centigrade.

1 5. The method as set forth in Claim 1 further comprising the
2 step of:

3 removing unconverted titanium from said layer of C49 type
4 TiSi_2 in said triangularly shaped layer of polysilicon.

1 6. The method as set forth in Claim 1 further comprising the
2 steps of:

3 applying a current to said triangularly shaped layer of C49
4 type TiSi_2 in said triangularly shaped layer of polysilicon; and

5 converting a portion of said triangularly shaped layer of C49
6 type TiSi_2 to C54 type TiSi_2 to lower a resistance of said
7 triangularly shaped layer of C49 type TiSi_2 .

1 7. The method as set forth in Claim 6 wherein said step of
2 converting a portion of said triangularly shaped layer of C49 type
3 TiSi₂ to C54 type TiSi₂ comprises the steps of:

4 generating heat from said current in a high resistance portion
5 of said triangularly shaped layer of C49 type TiSi₂; and

6 increasing a temperature of said high resistance portion of
7 said triangularly shaped layer of C49 type TiSi₂ to a temperature
8 that is at least approximately seven hundred degrees Centigrade.

1 8. The method as set forth in Claim 7 wherein said
2 conversion of C49 type TiSi₂ to C54 type TiSi₂ in said high
3 resistance portion decreases a resistance of said high resistance
4 portion to a level of resistance where no more C49 type TiSi₂ is
5 converted for said value of current.

1 9. The method as set forth in Claim 7 further comprising the
2 step of:

3 selecting a desired value of resistance for said triangularly
4 shaped layer of C49 type TiSi₂ by selecting a magnitude of said
5 current.

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1 10. The method as set forth in Claim 7 further comprising the
2 step of:
3 decreasing a resistance of said triangularly shaped layer of
4 C49 type TiSi_2 by increasing a magnitude of said current.

1 11. A self heating adjustable titanium disilicon (TiSi_2)
2 resistor, said resistor comprising:

3 a triangularly shaped layer of polysilicon placed on a layer
4 of insulation material;

5 a layer of titanium applied over said triangularly shaped
6 layer of polysilicon; and

7 a triangularly shaped layer of C49 type titanium disilicon
8 (TiSi_2) formed in said triangularly shaped layer of polysilicon by
9 heating said layer of titanium.

1 12. The self heating adjustable TiSi_2 resistor as set forth
2 in Claim 11 further comprising:

3 an input contact coupled to a small end of said triangularly
4 shaped layer of polysilicon;

5 an output contact coupled to a large end of said triangularly
6 shaped layer of polysilicon;

7 an input metal connector coupled to said input contact; and

8 an output metal connector coupled to said output contact.

1 13. The self heating adjustable TiSi_2 resistor as set forth
2 in Claim 11 wherein a thickness of said layer of titanium is
3 approximately five hundred Angstroms (500 \AA).

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1 14. The self heating adjustable TiSi_2 resistor as set forth
2 in Claim 11 wherein said layer of titanium is heated to a
3 temperature of approximately six hundred twenty degrees Centigrade.

1 15. The self heating adjustable TiSi_2 resistor as set forth
2 in Claim 11 wherein unconverted titanium is removed from said layer
3 of C49 type TiSi_2 in said triangularly shaped layer of polysilicon.

1 16. The self heating adjustable TiSi_2 resistor as set forth
2 in Claim 11 further comprising:

3 a current applied to said triangularly shaped layer of C49
4 type TiSi_2 in said triangularly shaped layer of polysilicon; and

5 a portion of said triangularly shaped layer of C49 type TiSi_2
6 converted to C54 type TiSi_2 having a lower resistance than
7 unconverted portions of said triangularly shaped layer of C49 type
8 TiSi_2 .

1 17. The self heating adjustable TiSi_2 resistor as set forth
2 in Claim 16 further comprising:

3 heat generated from said current in a high resistance portion
4 of said triangularly shaped layer of C49 type TiSi_2 ;

5 wherein said heat increases a temperature of said high
6 resistance portion of said triangularly shaped layer of C49 type
7 TiSi_2 to a temperature that is at least approximately seven hundred
8 degrees Centigrade.

1 18. The self heating adjustable TiSi_2 resistor as set forth
2 in Claim 17 wherein said conversion of C49 type TiSi_2 to C54 type
3 TiSi_2 in said high resistance portion decreases a resistance of
4 said high resistance portion to a level of resistance where no more
5 C49 type TiSi_2 is converted for said value of current.

1 19. The self heating adjustable TiSi_2 resistor as set forth
2 in Claim 17 further comprising:

3 a current having a selected magnitude that flows through said
4 triangularly shaped layer of C49 type TiSi_2 ; and

5 a desired value of resistance for said triangularly shaped
6 layer of C49 type TiSi_2 that is correlated with said magnitude of
7 said current.

1 20. The self heating adjustable TiSi_2 resistor as set forth
2 in Claim 17 wherein a resistance of said triangularly shaped layer
3 of C49 type TiSi_2 is decreased by increasing a magnitude of said
4 current.